



Universal Pickup Loading Ramp

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10 Claims, 8 Drawing Sheets

BACKGROUND

The present invention relates to mounting, installing, attaching a loading ramp to a pickup truck or related vehicle. A common loading ramp for a pickup truck is the use of a wooden, metal or other material ramp with one end on the ground and the other propped or attached to the end of the tailgate or truck bed. This method has sustained improvements through the addition of clamps, straps or brackets to prevent slippage of the ramp. These prior methods do not address the change in angle at the juncture of the incline ramp and the horizontal truck bed. Moreover, the prior ramp devices have a number of drawbacks including excessive weight and size to achieve load strength, no provision of storage on the truck after loading, complicated design and installation/ assembly process and insufficient strength for heavy loading.

Summary of the Invention

An object of the present invention is to provide a method of loading a pickup truck that is universal, economical, mechanically simple to install and operate and has the necessary structural strength to sustain the loading of motorcycles, ATV's and other similar devices in the bed of a pickup truck. Storage of this device when not installed on the pickup truck is a simple matter of hanging on a convenient wall space.

Another object of the invention is to eliminate the sharp change in angle at the point of juncture between the ramp and the bed of the pickup truck which contributes to high centering during the loading of long wheelbase motorcycles or similar devices.

A further object is to allow the installation and removal of the loading ramp assembly by one person without the use of tools.

The above objects in connection the elimination of the requirement of a trailer to transport motorcycles, ATV's and the provision to transport safely within a pickup truck becomes apparent upon reference to drawings and numerals contained herein.

Brief Description of the Drawings

The summary and other objects, advantages and features of the invention will become apparent from consideration and review of the claims and the description of the drawings in which:

FIG. 1. depicts a fragmented perspective view of a pickup truck with the tailgate and ramp assembly installed in the retracted position and constructed in accordance with the principles of the subject invention.

FIG. 2. depicts a perspective view of the ramps proper in the retracted position.

FIG. 3. depicts a perspective view of the ramps proper in the extended position.

FIG. 4. depicts a perspective view of the connector lug between the ramp proper and the damping linkage.

FIG. 5. depicts a fragmented elevation view of the ramp support frame and damping linkage.

FIG. 6. depicts a plan, end and front and rear elevation views of the tailgate replacement / ramp support frame.

FIG. 7. depicts a perspective view of the ramp support attachment / adaptor plate.

FIG. 8. depicts a perspective view of link between the ramp support attachment plate and the ramp support proper.

Detailed Description of the Drawings

Figure 1 shows a ramp / ramp support frame at the rear open end of a pickup truck. The pickup truck (1) is a perspective-fragmented view including vertical sidewalls (32) and a bottom bed of the truck (5), the ramp (17 & 18) and ramp support frame (Fig. 6.). The ramp support frame (Fig. 6.) installs using the same lug pivot points and mounting points as a conventional tailgate. The support frame mounting slots (11) are designed to allow the frame assembly (Fig. 6.) to move forward as load is applied, thus transferring load from the frame (Fig. 6.) to the truck bed (5) along support frame member (12). The ramp support frame (Fig. 6.) is further supported and load transferred to the vertical sidewalls of the pickup truck (32) through a connection plate (13) and connection strap (16). The connection plate (13) has keyhole type slots (14 & 15) to allow assembly, without the use of tools, to the pickup bed vertical walls and hardware (2 & 3) as furnished by the pickup truck manufacturer.

The ramp as shown in Fig. 2 & 3, is comprised of two channel sections (17 & 20) constructed to allow the outer ramp section (17) to be fixed to the ramp support frame (Fig. 6.) and the inner ramp section (20) to extend rearward from the truck bed, as shown in Fig. 3. The inner ramp in the extended position becomes fixed as it cams over (10) and remains in the extended fixed position until lifted up to be retracted into the outer ramp (17). Once in the retracted position it is held in place by a spring-loaded latch (25). The internal or sliding portion of the ramp assembly (20) is fitted with handles (23) on both sides of the ramp to facilitate the extension and retraction process. Moreover, these handles are of such a size to counterweight the sliding portion of the ramp (20) to facilitate balance of the device. The outer ramp (17) and the inner ramp (20) are fitted with stops (21 & 22) to prevent the overextension of the inner ramp (20) when sliding it to the fully extended position (FIG. 3.). The inner ramp (20) is held in the extended position in relationship to

the outer ramp (17) by cam action over the bar (10) of the support frame (Fig. 6.). The ramp at this point is effectively a continuous surface which can tilt about the pivot point support (9) mounted on the ramp support frame (Fig. 6.). The ramp is affixed to the pivot bar (27) by means of a plate (18) and a hex key (19) and is held in place by threaded bar and knob assembly (28). The pivot bar (27) is connected to a lever arm (29) which connects to a damper assembly (30) which connects between the lever arm (29) and the opposite end mounting and reaction point (7). By so doing, this allows the ramp to move between a horizontal position parallel with the truck bed (5) and a diagonal position between the truck bed and the ground, thus providing a smooth incline between the ground and the truck bed. As the load moves upward on the ramp assembly, the ramp moves from an inclined position to a horizontal position again parallel with the truck bed. The damper (30) and lever arm / pivot assembly (27 & 28) cause the ramp to move through the arc in a smooth controlled manner consistent with upward moving load. Once the load has moved fully upward on the ramp assembly (20 & 17), the load would now be in a horizontal attitude in and parallel with the truck bed (5). The inner ramp (20) can be lifted by hand and returned to the retracted stowed position inside the outer ramp (17). Utilization of the ramp to unload the truck is the reverse of the above process.